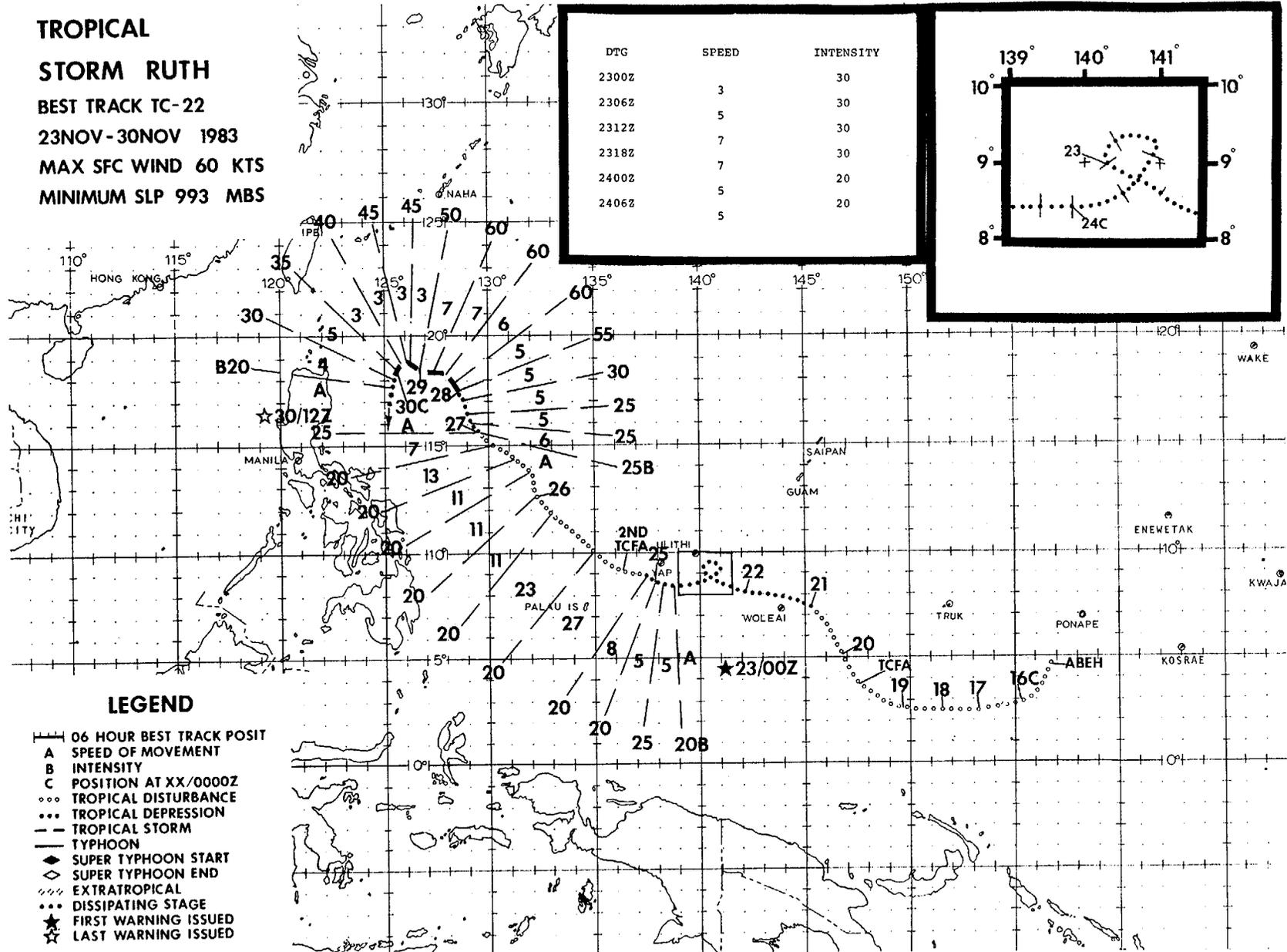
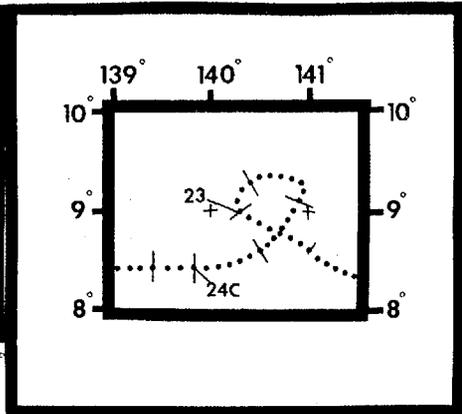


**TROPICAL  
STORM RUTH**  
BEST TRACK TC-22  
23NOV-30NOV 1983  
MAX SFC WIND 60 KTS  
MINIMUM SLP 993 MBS

DTG	SPEED	INTENSITY
2300Z	3	30
2306Z	5	30
2312Z	7	30
2318Z	7	30
2400Z	5	20
2406Z	5	20



**LEGEND**

- 06 HOUR BEST TRACK POSIT
- A SPEED OF MOVEMENT
- B INTENSITY
- C POSITION AT XX/0000Z
- ... TROPICAL DISTURBANCE
- - - TROPICAL DEPRESSION
- - - TROPICAL STORM
- TYPHOON
- ◆ SUPER TYPHOON START
- ◇ SUPER TYPHOON END
- ... EXTRATROPICAL
- ... DISSIPATING STAGE
- ★ FIRST WARNING ISSUED
- ☆ LAST WARNING ISSUED

TROPICAL STORM RUTH (22W)

Ruth was one of the more erratic storms of 1983. It dissipated, regenerated, looped, moved at speeds varying from 3 to 25 kt (6-46 km/hr), and was the subject of four TCFA's and two final warnings.

Ruth was first detected as a tropical disturbance embedded in the near-equatorial trough southeast of Guam. The disturbance was discussed in the Significant Tropical Weather Advisory (ABEH PGTW) on 15 November and was monitored closely for the next four days as it moved westward along the trough axis. Little change in organization or intensity was observed during this period. MSLP was fairly constant at 1008 mb and surface winds in the area were 5-10 kt (3-5 m/s).

On the 19th of November, the disturbance showed signs of development. Associated convective activity expanded to cover a large area approximately 1200 nm (2222 km) east and west by 900 nm (1667 km) north and south. Convection was intense and weakly banded into a center near 5N 147E. A TCFA was issued for the disturbance at 191600Z when surface winds picked up to 15-25 kt (8-13 m/s).

The disturbance was continued in alert status for four days as it moved slowly northwestward without any further development. Aircraft reconnaissance flights into the area on the 20th and 21st were unable to close off a surface center and provided data indicating the presence of a surface trough or circulation of synoptic scale. Ruth's arrested development at this stage was due to the presence of Orchid to the west and the passage of a frontal system to the northwest. Although inflow on the north side of Ruth was provided in abundance by the Trade Winds, inflow on the south side was very weak. Most of the low latitude westerly flow was drawn into Orchid leaving an area of weak westerlies to the east of Orchid flowing into Ruth. The frontal system to the northwest of Ruth interacted with the subtropical ridge to create an area

of enhanced mid-level flow inhibiting the development of a circulation at the mid-levels.

In spite of these factors, Ruth was able to maintain convective organization and even intensified slightly with maximum sustained winds reaching 30 kt (15 m/s). A reconnaissance aircraft on an investigative mission at 222345Z was able to close off a surface circulation with MSLP of 1004 mb. The first warning on Ruth as a tropical depression was issued on receipt of this report and projected continued slow intensification and north-northwestward movement.

Ruth maintained 30 kt (15 m/s) intensity for the next 24 hours as it completed an anticyclonic loop but appeared on satellite imagery to be shearing in the process. Warnings were terminated at 240000Z after data from reconnaissance aircraft indicated that maximum sustained winds associated with the circulation were 20 kt (10 m/s).

Over the next four days, Ruth moved quite erratically while exhibiting wide ranging fluctuations in its convective signature on satellite imagery. A TCFA was issued at 250820Z when reconnaissance aircraft located a broad circulation with maximum surface winds of 25 kt (13 m/s) and MSLP of 1004 mb. Ruth remained in alert status until satellite imagery on the 26th indicated that the circulation was shearing. Ruth was placed in alert status again at 270343Z when it appeared from satellite imagery that the circulation was regaining vertical alignment. Synoptic conditions at this time were favorable for further development. Typhoon Orchid had weakened to a tropical depression and no longer competed with Ruth for inflow. At the same time, the destructive interaction between Ruth and the frontal system previously discussed was broken as the front propagated eastward.

Ruth flourished in this environment and intensified rapidly. A reconnaissance aircraft reported surface winds of 55 kt

(28 m/s) and MSLP of 997 mb at 272340Z just prior to the resumption of warnings on Ruth at 280000Z. Maximum winds associated with Ruth were higher than would be expected from the MSLP due to the enhancement of Ruth's circulation by an intense northeasterly monsoon gale area on its northwest side.

Ruth peaked at a maximum intensity of 60 kt (31 m/s) briefly on the 28th before the shearing effects of its environment

caused it to weaken for the final time. Ruth was able to intensify to near typhoon intensity in spite of its location in an area of moderate vertical shear. However, when the northeasterly monsoon flow was enhanced further by a cold outbreak from the continent, the resultant increase in vertical shear proved to be too much for the plucky little system. Ruth weakened rapidly after shearing and dissipated as an exposed low-level circulation on the 30th.

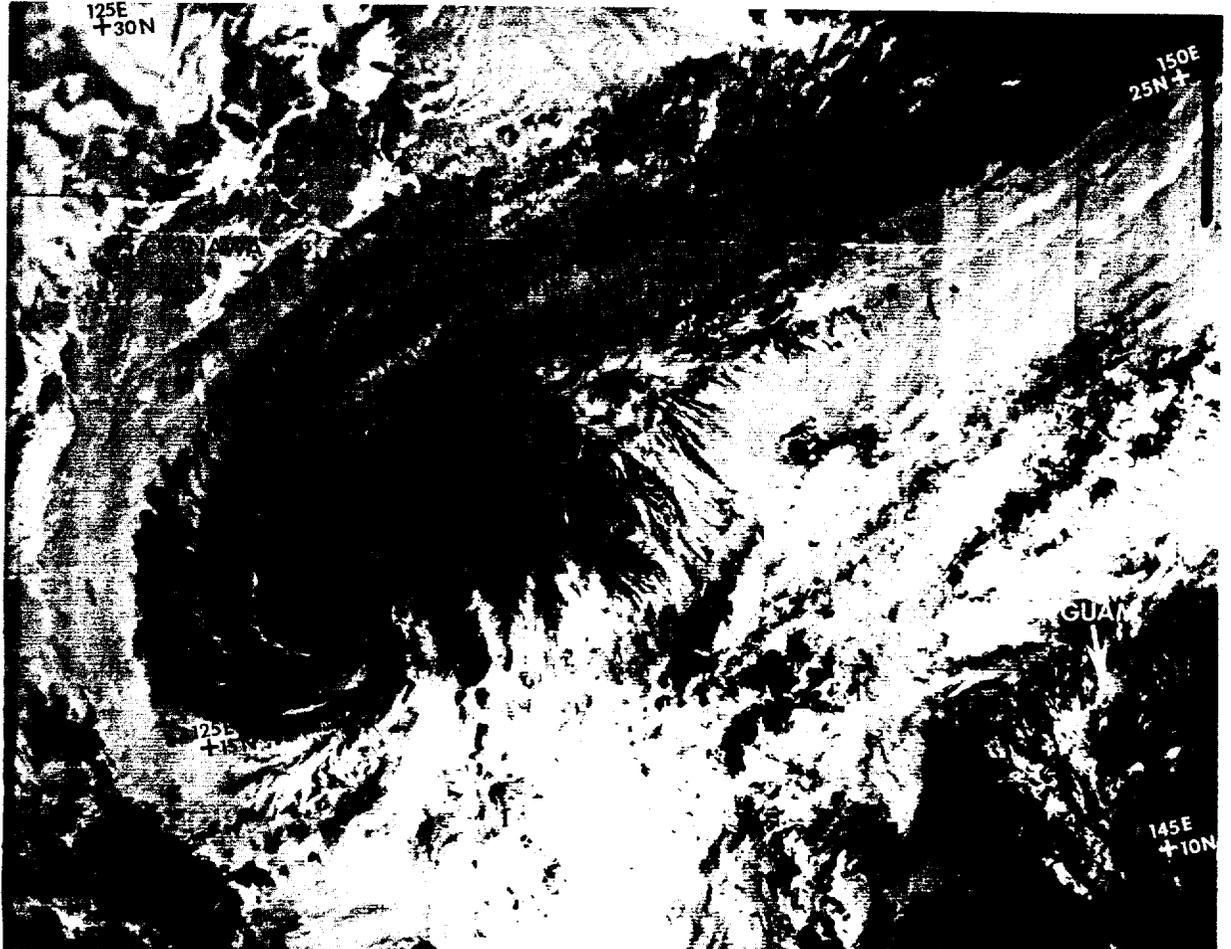


Figure 3-22-1. Tropical Storm Ruth near maximum intensity. Interaction with the frontal boundary to the north and the cold air outbreak south of Japan led to Ruth's destruction two days later (280935Z November DMSP infrared imagery).